Thysanoptera of the Hawaiian Islands

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(Presented by O. H. Swezey at the meeting of November 7, 1935)

This paper adds one genus, five new species and five previously known species to the fauna of the Hawaiian Islands, as listed in my earlier papers.* Many other specimens of species listed in the earlier papers were included in the numerous collections forwarded to me for identification but reference is not made to them here. I am deeply indebted to Messrs. O. H. Swezey, F. X. Williams, Walter Carter, K. Sakimura, K. Ito and others for the great interest they have taken in the Thysanoptera. This is evidenced by the scores of collections they have made and the hundreds of specimens they have forwarded to me for study. Type specimens of the new species described and others are being deposited in the collection of the Hawaiian Entomological Society, Honolulu. Other types remain in the author's collection.

TEREBRANTIA

Superfamily THRIPOIDEA Hood, 1915.

Family THRIPIDAE Uzel, 1895.

Subfamily HELIOTHRIPINAE Karny, 1921.

Hercothrips femoralis (Reuter).

Numerous specimens of this species were taken in a greenhouse June 27, 1930, at Manoa, Oahu, on the following plants: *Emilia flammea, Senecio,* egg plant, yellow pualele, in addition to plants previously recorded. (K. Sakimura) (No. 4341).

Subfamily CHIROTHRIPINAE Karny.

Chirothrips sacchari new species.

Female holotype: Head, thorax, tip of abdonmen, antennal segments five

* Thysanoptera of the Hawaiian Islands. Proc. Haw. Ent. Soc. VII, No. 1, pp. 105-134, June, 1928. New Thysanoptera of the Hawaiian Islands. Proc. Haw. Ent. Soc., VIII, No. 3, pp. 499-503, July, 1934.

to eight and wings light brown; legs, abdomen and first four antennal segments, yellow.

Total body length 1.01 mm.; head length 0.126 mm., width 0.116 mm.; prothorax length 0.19 mm., width in front 0.126 mm., behind 0.273 mm.; abdomen width 0.33 mm.; antennal segments length (width) I, 23 (43); II, 26 to base of third segment, 43 to tip of angular process (26 near middle); III, 33 (26); IV, 26 (26); V, 23 (20); VI, 36 (16); VII, 10; VIII, 10; total 193 microns. Spines on ninth abdominal segment 66 and on tenth 100 microns.

Type material: female holotype, and five female paratypes taken on sugar cane February 27, 1929 (O. H. Swezey) (No. 3571).

Type locality: Kailua, Oahu, T.H.

This species may be compared with *mexicanus* Crawford, but is readily separated by the following characters: there are four to six forehead setae as compared with two in *mexicanus,* also there are two longitudinal veins in the fore wing as compared with one in *mexicanus.* The first antennal segment in *mexicanus* is deep brown while in *sacchari* it is yellow or very slightly shaded with grey. The pair of spines on each posterior angle of the prothorax are stronger in *mexicanus* while in this species they are only a little longer than other setae at the angles and along the posterior margin.

Chirothrips fulvus new species.

Female holotype: Head, antennal segments one and three to eight brown, thorax and abdomen brownish yellow, darker at sides; second antennal segment yellow at extreme base, fore tibiae and tarsi likewise yellow, otherwise legs are brownish yellow darkened on the outer sides; fore wings light brown with an irregular whitish cross band in second sixth, this white area continuing along anterior margin in front of fore vein to past middle of wing; hind wings clear.

Total body length 1.08 mm.; head length 0.11 mm., width 0.12 mm.; prothorax length 0.20 mm., width 0.13 mm. in front and 0.27 mm. behind; antennal segments length (width): I, 16 (46); II, 30 to base of third, 46 to tip (26 across middle); III, 33 (23); IV, 33 (26); V, 26 (20); VI, 40 (16); VII, 10; VIII, 13; total 210 microns. Spines on posterior angles of prothorax, outer 16 and inner 26 microns; spines at tip of abdomen 76 microns.

Male allotype: yellow with head and tip of abdomen slightly brownish. Total length of body 0.82 mm. Wings wanting.

Type material: female holotype, male allotype and two male and ten female paratypes taken on *Paspalum orbiculare,* June 16, 1930. (K. Sakimura). (No. 4337).

Type locality: Paumalu, Oahu, T. H.

The species is distinguished by having fifteen to seventeen forehead setae and the ocellar pair placed opposite anterior ocellus, by the enlarged first antennal segments, fore wings with light bands also the fore vein of fore wing has four spines near base and two near tip; the hind vein has five rather regularly placed spines.

This species may be compared with *vestis* Hood but is easily separated from this latter species which has the first antennal segment clear yellow, the pronotum closely and prominently set with short, stout spines along median fourth and similar patches of spines in middle of first four of five abdominal segments. The setae are small and scattered on the pronotum of *fulvus* and are not visible on the abdominal segments.

Subfamily THRIPINAE Karny

Taeniothrips carteri new species.

Female holotype: head and body color chestnut brown; all femora colored like body except tips of fore pair which are yellow; fore tibiae yellow shaded with brown at the margins, middle and hind tibiae brown in the middle, lighter at both ends; antennal segments one, two and four to eight dark brown, three mostly yellow shaded with greyish brown in outer half; wings clear.

Total body length 1.5 mm.; head length .147 mm.; width .17 mm.; prothorax length .147 mm., width .205 mm.; pterothorax width, .28 mm. Antennal segments length (width) III, 56 (21); IV, 46; V, 40; VI, 53; VII, 10; VIII, 13; total 260 microns. Length of spines: interocellar 36, on posterior angles of prothorax, outer 60, inner 73; on ninth and tenth abdominal segments 133 microns.

Head only a little wider than long, cheeks almost straight, ocelli present, interocellar spines placed outside the ocellar triangle almost on a line crossing at the posterior margin of anterior ocellus. Antennal segments seven and eight small, almost subequal. Prothorax with three spines on either side along posterior margin. Median pair of spines on metanotum placed 10 microns back from anterior margin. Comb on eighth abdominal segment entirely wanting. Fore vein of fore wing with 3-3 basal spines and three distal spines in outer half of wing; hind vein with twelve spines.

Type material: female holotype taken on onion, June 13, 1930. (Walter Carter) (Moulton No. 4344). Type in author's collection.

Type locality: Kilauea, Kauai, T. H.

This species may be separated from *hawaiiensis* Morgan, by the clear color of its wings, in the latter species the fore wings being clear at base and brown beyond. In *hawaiiensis* the legs are mostly yellow and the comb along posterior margin of eighth abdominal segment is complete.

The writer takes pleasure in naming this species after Dr. Walter Carter, the collector.

Taeniothrips simplex Morison.

Numerous specimens taken on gladioli November 16, 1932, at Nuuanu, Oahu, T. H. (Q. C. Chock) (No. 5416). This is recognized as the gladiolus thrips and was formerly known as *T. gladioli* M. & S.

Thrips panicus Moulton.

Numerous specimens of this thrips have been taken in the Hawaiian Islands with hosts and records as follows: Sugar cane, Molokai, January 25, 1929 (O. H. Swezey) (No. 3272); rice, Honolulu, April 17, 1928 (O. H. Swezey) (No. 3531); Echinochloa, Kailua, Oahu, April 11, 1929 (O. H. Swezey) (No. 3538); *Cenchrus echinatus,* April 7, 1930 (K. Sakimura) (No. 4343); pineapple, Manoa, Oahu, April 19, 1930 (K. Ito) (No. 4338); *Eleusine indica,* February 18, 1930, Waipio, Oahu (K. Ito) (No. 4339); pineapple, Waipio, Oahu, December 20, 1930 (Walter Carter); on pineapple plants in quarantine house, Honolulu, April 18, 1934 (Walter Carter). Other collections have been sent in for identification but the hosts and localities as they relate to the Hawaiian Islands are covered in the above references.

This species has also been taken on sugar cane in Cuba and the writer collected it on sugar cane in São Paulo, Brazil, in 1929.

Thrips trehernei Priesner.

One specimen taken on pineapple, June 19, 1930, at Manoa, Oahu (K. Ito) (No. 4338).

TUBULIFERA

Superfamily PHLOEOTHRIPOIDEA Hood, 1915

Family PHLOEOTHRIPIDAE Uzel, 1895

Subfamily PHLOEOTHRIPINAE Karny, 1921

Tribe HOPLOTHRIPINI Priesner, 1927

Hoplothrips hawaiiensis new species.

Female holotype: Color dark chestnut brown with median portion of head and first abdominal segments somewhat lighter; all femora, middle and hind tibiae dark brown, yellow at joints, fore tibiae clear yellow or with a slight shading of light brown; fore tarsi yellowish, others light brown. Antennal segments one, two and most of four to eight dark brown, three yellowish in basal half, light brown in distal half, basal third of four and five and extreme base of six yellow.

Total body length 2.7 mm. Head length .294 mm., width .245 mm.; prothorax length .20 mm., width without coxae .375 mm.; width of mesothorax .42 mm.; tube length .22 mm., width at base .088 mm. Antennal segments length (width): I, 53(50); II, 66(40); III, 93(43); IV, 90(43); V, 83(40); VI, 73(36); VII, 66; VIII, 50; total 588 microns. Length of spines: postoculars 83, on anterior margin and angles of prothorax vestigial, midlaterals 133, on posterior angles, outer 80, inner 50, inner long pair on posterior margin of ninth abdominal segment 133, three small spines on posterior angles 40 to 50, with the middle spine immediately at the angle some longer than the others, at tip of tube about 166 microns.

Head 1.2 longer than wide, angular in front, eyes distinctly flattened on their outer margins, cheeks nearly parallel but constricted at neck; back of head with transverse reticulation; only a very few inconspicuous cheek spines. Antenna twice longer than head, three to six clavate, eight slightly constricted at base. Prothorax about two-thirds as long as head, with prominent midlateral spines which are longer than those on posterior angles and in turn the inner spines of this pair are shortest. Fore femora moderately thickened, each fore tarsus armed with a rather sharp but broad-seated tooth. Wings wanting. Tube .75 as long as head. A pair of very weak wing retaining spines on abdominal segments three to seven and a single long prominent spine near posterior margin on each side, the regular angular spines are all vestigial; this condition holds also for the ninth abdominal segment where there is only one prominent spine on either side, the angular spines are reduced to setae. In some paratypes this angular spine may be longer but never obtains more than half the length of the other prominent spines.

Male allotype similar to the female except for the greatly enlarged fore femora and the somewhat stronger tooth on each fore tarsus. The small group of small spurs on outer margin of fore coxae are also more prominent. The spine at each posterior angle of ninth abdominal segment is of about the same length as in the female but stouter.

Type material: female holotype, male allotype, one male and seven female paratypes taken in dead frond stems of tree fern, *Cibotium,* March 12, 1932, on Mt. Tantalus, Oahu (Moulton No. 5412) (O. H. Swezey) and on tree fern, *Cibotium menziesii,* July 18, 1927, at Haelaau, Maui. (E. J. Bryan, Jr.) (No. 3543).

This species may be compared with *perkinsi* Bagnall, the only other known species from the Hawaiian Islands in which the spines are so reduced at the posterior angles of abdominal segments; *hawaiiensis,* however, may be separated by its larger size and color. *H. perkinsi* is described as being 1.8 mm. in length and the antennae are dark brown with the basal part of only the third segment yellowish. *H. swezeyi* is similar in color to *hawaiiensis* but is readily separated by the fully developed spines on abdominal segments.

Hoplothrips coprosmae new species.

Female holotype: very dark chestnut brown with median portion of head and base and tip of tube somewhat lighter; legs mostly dark brown, joints lighter, fore tibiae and all tarsi brownish yellow; antennae mostly dark brown, second segment which is lighter in outer portion, three yellow in basal third, outer portion yellowish brown, four and five yellowish in basal third, six yellowish at extreme base.

Total body length 3.2 mm. with abdomen somewhat distended; head length .367 mm., width .264 mm.; prothorax length .278 mm., width excluding coxae .47 mm.; pterothorax width .54 mm.; tube length .28 mm., width at base .117 mm. Antennal segments length (width) I, 60(60); II, 80(43); III, 110(46); IV, 110(46); V, 100(40); VI, 90(36); VII, 73; VIII, 60; total 690 microns. Length of spines: postoculars 126, on anterior margin vestigial, at anterior angles 30, midlaterals 183, on posterior angles outer 116-130, inner 133, on posterior angles of ninth abdominal segment outer 110, inner 200-216, at tip of tube 216 microns.

Head 1.4 longer than wide, angular in front, eyes flattened on the margins, cheeks slightly rounded and constricted at the neck; with several prominent cheek spines some of which arise from small tubercles; postoculars long and prominent; ocelli fully developed. Antenna 1.85 longer than head, segments three to six clavate. Prothorax .7 as long as head, with a small spine on each anterior angle, midlateral spines longest, pair at each posterior angle also prominent. Fore femora about twice broader than others, fore tarsus armed with a prominent broad-seated tooth. Abdomen broader than pterothorax, with spines at posterior angles of segments well developed, the outer pair on ninth segment about two-thirds as long as inner ones; spines at tip about two-thirds as long as tube. Wings completely wanting.

Male allotype: colored as in female but with fore tibiae distinctly yellow in median portion and darkened with brown on upper and lower margins; fore femora greatly enlarged, fore tarsal tooth strong.

Type material: female holotype, male allotype, five male and three female paratypes together with a number of larvae taken in crack of tree stem, *Coprosma* (O. H. Swezey) (No. 5406) September 29, 1931, and under a stone (F. X. Williams) (No. 5407), at an elevation of 5,500 to 6,000 feet.

Type locality: Nauhi, Hawaii, T. H.

This species can be compared with *ovatus* Bagnall but is much larger and the eighth antennal segment is not abruptly constricted at the base as in *ovatus*.

Polyporothrips biformis (Moulton).

Correction: This species was formerly described under the name *Poecilothrips biformis* (Proceedings of the Hawaiian Entomological Society, Vol. VIII, No. 3, p. 501, July, 1934). A study of additional material, especially of the wingless forms, convinces me that this species should rather be assigned to the genus Polyporothrips.

Tribe HAPLOTHRIPINI Priesner

Aleurodothrips fasciapennis (Franklin).

Specimens taken in San Francisco quarantine in August, 1929, on coconut from Honolulu. (No. 3684).

Haplothrips (Karnyothrips) flavipes Jones.

This species of rather wide distribution is now recorded as found in the Hawaiian Islands. Mr. Swezey has made collections as follows: from *Acacia koa* at Poamoha and Sugar Loaf Hill, November 11, 1933 (M. Nos. 5379, 5380); from dead twigs of *Euphorbia* on Mt. Tantalus, May 20, 1934 (No. 5385) and in blossoms of Lantana at Honolulu, August 20, 1934 (No. 5387).

Subfamily MEGATHRIPINAE Karny, 1921

Tribe MEGATHRIPINI Priesner, 1927

Diceratothrips brevicornis Bag.

One specimen of this species was taken from under bark of *Osteomeles* September 24, 1929, in Manoa Valley, Oahu. (O. H. Swezey) (Moulton No. 3921).

The following brief analysis in addition to Mr. Bagnal's earlier description may be helpful to distinguish this species.

Total body length 3.36 mm. Head length 0.47 mm., width behind eyes 0.26 mm.; prothorax length 0.26 mm., width 0.47 mm.; tube length 0.50 mm., width at base 0.132 mm. Antennal segments length (width) I, 50(53); II, 80(40); III, 133(46); IV, 146(50); V, 126(40); VI, 83(33); VII, 66(30); VIII, 43; total 735 microns. Length of spines: anteocellar 40, postocellar 44, postoculars 166; on anterior margin and angles of prothorax 60, midlaterals 83, on posterior angles inner, 150, outer, broken off; on ninth abdominal segment 500, at tip of tube 150 microns. Basal wing spines 66, 100 and 216 microns respectively.